

WHAT IS CLAIMED IS:

1. A measuring head for a device for measuring the concentration of a paramagnetic gas in a gas sample as a function of the change in the thermal conductivity of the paramagnetic gas in a variable magnetic field, the measuring head comprising:

a first cylindrical housing part made of a steel alloy for accommodating a magnet coil

5 body, said first cylindrical housing part extending concentrically around a central axis thereof;

a second cylindrical housing part made of a steel alloy for accommodating another magnet coil body, said second cylindrical housing part extending concentrically around a central axis of each housing part;

10 a first metallic cylindrical bar arranged in the area of the central axis of said first housing part for use as a magnet pole for the measuring head;

a second metallic cylindrical bar arranged in the area of the central axis of said second housing part for use as a magnet pole for the measuring head, said first metallic cylindrical bar and said second metallic cylindrical bar being located at spaced locations with a defined air gap in the assembled state of the measuring head;

15 a sample gas cuvette support provided in the air gap between the housing parts for positioning a sample gas cuvette holder, said sample gas cuvette support being provided with a gas inlet and gas outlet.

2. A measuring head in accordance with claim 1, wherein the sample gas cuvette support is formed by recesses for accommodating the sample gas cuvette holder in the magnet coil body.

3. A measuring head in accordance with claim 1, further comprising: a stationary sleeve provided for the connection to an external gas sampling system.

4. A measuring head in accordance with claim 3, further comprising a gas guide extending via separate gas channels in the wall of the second magnet coil body in parallel to the central axis of the second housing part, and a stationary sleeve for connection of an external gas sampling system to the second magnet coil body.

5. A measuring head in accordance with claim 1, further comprising: an additional disk-shaped module including said cuvette support and said gas inlet and said gas outlet, said additional disk-shaped module being inserted in an accurately fitting manner between said first housing part and said second housing part.

6. A measuring head in accordance with claim 1, wherein said first housing part and said second housing part are made of machining steel.

7. A measuring head in accordance with claim 6, wherein said first housing part is formed as one piece with said first cylindrical bar, and said second housing part is formed as one piece with said second cylindrical bar.

8. A measuring head in accordance with claim 5, wherein said module consists of a material not conducting the magnetic flux.

9. A measuring head in accordance with claim 8, wherein said module is a polysulfone (PSU) or the material POCAN®.

10. A measuring head in accordance with claim 1, wherein the air gap between the cylindrical bars used as magnetic poles is set and adjusted by means of a thread arranged on one of the bars.

11. A paramagnetic gas concentration measuring head for measuring a change in the thermal conductivity of a paramagnetic gas in a variable magnetic field, the measuring head comprising:

a first magnet coil body;

5 a first housing part made of a steel alloy for accommodating said first magnet coil body;

a second magnet coil body;

a second cylindrical housing part made of a steel alloy for accommodating said second magnet coil body;

10 a first metallic bar arranged centrally in said first housing part for use as a magnet pole for the measuring head;

a second metallic bar arranged centrally in said second housing part for use as a magnet pole for the measuring head, said first metallic bar and said second metallic bar being located at spaced locations with a defined air gap in the assembled state of the measuring head;

a sample gas cuvette holder; and

15 a sample gas cuvette support provided in the air gap between said first housing part and

said second housing part for positioning said sample gas cuvette holder, said sample gas cuvette support being provided with a gas inlet and gas outlet.

12. A measuring head in accordance with claim 11, wherein the sample gas cuvette support is formed by recesses in the magnet coil body for accommodating said sample gas cuvette holder.

13. A measuring head in accordance with claim 11, further comprising: a stationary sleeve provided for the connection to an external gas sampling system.

14. A measuring head in accordance with claim 13, further comprising a gas guide extending via separate gas channels in the wall of the second magnet coil body in parallel to the central axis of the second housing part, and a stationary sleeve for connection of an external gas sampling system to the second magnet coil body.

15. A measuring head in accordance with claim 11, further comprising: an additional disk-shaped module including said cuvette support and said gas inlet and said gas outlet, said additional disk-shaped module being inserted in an accurately fitting manner between said first housing part and said second housing part.

16. A measuring head in accordance with claim 11, wherein said first housing part and said second housing part are made of machining steel.

17. A measuring head in accordance with claim 16, wherein said first housing part is formed as one piece with said first cylindrical bar and said second housing part is formed as one piece with said second cylindrical bar.

18. A measuring head in accordance with claim 15, wherein said module consists of a material not conducting the magnetic flux.

19. A measuring head in accordance with claim 18, wherein said module is a polysulfone (PSU) or the material POCAN®.

20. A measuring head in accordance with claim 11, wherein the air gap between the cylindrical bars used as magnetic poles is set and adjusted by means of a thread arranged on one of the bars.